APPENDIX B

PAVEMENT DESIGN FOR FROST ACTION

Depth of frost penetration is related to the freezing index. Figure B-1 shows Arizona freezing index values representing the average of the four coldest winters between 1931 and 1970. This figure should be used to estimate the depth of frost penetration using the following formula.

$$D_F = (FI)^{0.5}$$

D_F = Depth of frost penetration in inches

FI = Freezing index from Figure B-1

For purposes of pavement design all highways constructed within an area of the state with some freezing index shall consist of non-frost susceptible materials. These materials include pavement, bound bases and unbound base with no more than six (6) percent passing the number 200 sieve.

If the depth of frost penetration is greater than the required pavement structural section (pavement plus base), then additional non-frost susceptible base should be included to prevent frost damage.

If other constraints such as utilities, drainage, traffic access, etc., prohibit the construction of a completely frost free structural section, then the thickest section practical should be built.

FIGURE B-1

FREEZING INDEX

1984
STATE HIGHWAY SYSTEM
OF
ARIZONA

ARIZONA DEPARTMENT OF TRANSPORTATION

AS OF JANUARY 1, 1984

LEGEND
STATE HIGHWAYS
SURVEY ONLY (APPROX. ALIGNMENT)
★ NUMBERS TEMPORARILY ASSIGNED

SCALE-MILES